PhD SEMINAR 2024
JANUARY 14 - 17, 2025 - IBG-2

Tracing Changes in Subsurface Water Storage Using SIF Emission Efficiency Satellite Data

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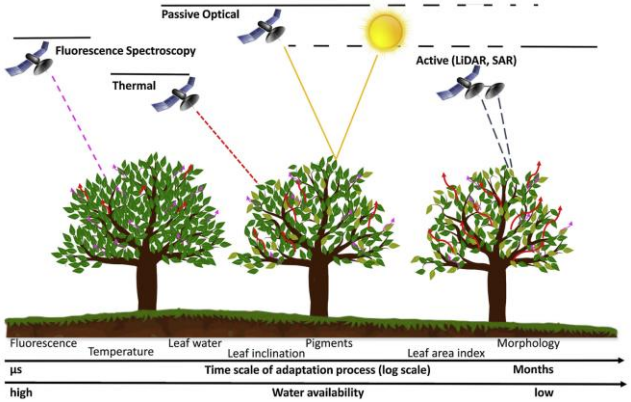
1. Objective

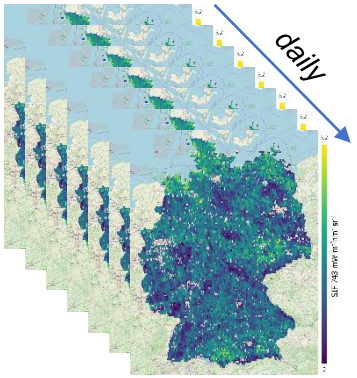


Damm et al. 2018

Fluorescence reacts faster than passive optical data to water defficiencies.

Is this reaction visible in SIF satellite data (Sentinel-5P) in Germany?

2018-2023



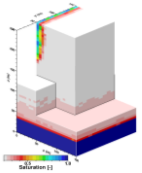
2. Methods

Calculating Emission Efficiency (ΦF) by normalizing SIF

$$\Phi F_{(APARchl)} \approx \Phi F_{(NIRv)} = \frac{\pi \times SIF^{743}_{canopy}}{NIRv \times PAR}$$

Canopy structure ***Illumination conditions***

vs.



Root zone soil moisture anomaly (Belleflamme et al. 2023, IBG-3)

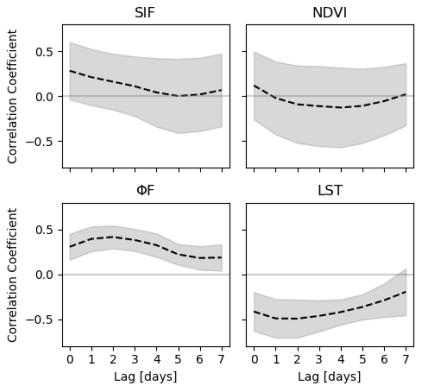
3. Results

- Normalized SIF lags 2-3 days behind negative root zone soil moisture anomaly

- no reaction visible in SIF or NDVI over short time scale (7 days)

- similar response of land surface temperature (LST)

Agricultural areas



Forests